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Claims

Claims 1-55 (canceled).

56. (original) An electronic device that operates at or about room temperature based on the Coulomb blockade effect, comprising:

a first cluster comprising a metal cluster core having a radius of between about 0.4 nm and about 1.8 nm; and

a second such cluster physically spaced apart from the first metal cluster at a distance of less than about 5 nm, where the physical separation between the first and second clusters is maintained by the clusters being coupled to a biomolecular scaffold.

57. (original) The electronic device of claim 56, comprising first and second biomolecular scaffolds, each with coupled clusters, where the first and second scaffolds intersect.

58. (original) The electronic device of claim 56, where the device exhibits a linear increase in the number of electrons passing between the first and second clusters as the potential difference between the two clusters is increased above a threshold value.

Claims 59-66 (canceled).